

IN THE CLAIMS:

Please cancel Claims 1-3, 5 and 7-9 without prejudice or disclaimer of the subject matter contained therein.

Please add Claims 10-15 as follows:

1. Cancelled
2. Cancelled
3. Cancelled
4. Previously Cancelled
5. Cancelled
6. Previously Cancelled
7. Cancelled
8. Cancelled
9. Cancelled

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10. (New) A filter circuit comprising:
a first circuit connected to a first terminal of a capacitor comprising:
a first differential circuit connected between a circuit input terminal and a circuit output terminal, said first differential circuit formed by a first transistor having a base electrode connected to said circuit input terminal and a collector electrode connected to a first power supply, and four diode-connected transistors connected in parallel with each other and each having an emitter electrode connected to an emitter electrode of said first transistor, an emitter electrode of said first transistor and each of said emitter electrodes of the four diode-connected transistors connected to a second power supply by a first current source, and
a second differential circuit comprising a second transistor having a base electrode connected to said

circuit input terminal and a collector electrode connected to said first power supply, and four diode-connected transistors connected in parallel with each other and each having an emitter electrode connected to an emitter electrode of said second transistor, an emitter electrode of said second transistor and each of said emitter electrodes of the four diode-connected transistors connected to said second power supply by a second current source, and

 a first connection node connecting base electrodes and collector electrodes of said four diode-connected transistors of said first differential circuit to said base electrode and said collector electrode of said second transistor in said second differential circuit, the first connection node connected to said first circuit output terminal and to said first power supply by a third current source; and

 a second circuit having an identical configuration as said first circuit including a second circuit output terminal, and a second circuit input terminal, said second circuit, said second circuit connected to a second terminal of said capacitor,

 wherein said filter circuit serves as a first-order low-pass filter.

11. (New) A filter circuit comprising:

 a first circuit connected to a first terminal of a capacitor comprising:

 a first differential circuit connected between a first circuit input terminal and a first circuit output terminal, said first differential circuit comprising a plurality of fundamental circuits connected in series between a first power supply and a second power supply to form n

vertical stages, each vertical stage formed by a transistor and four diode-connected transistors connected in parallel with each other, said transistor of said first vertical stage connected in series with said transistors of the 2-n vertical stages, said four diode-connected transistors of said first stage connected in series with said diode-connected transistors of the 2-n vertical stages, an emitter electrode of said transistor in the nth vertical stage and each of said emitter electrodes of the four diode-connected transistors in the nth vertical stage connected to said second power supply by a first current source,

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a second differential circuit comprising a plurality of fundamental circuits connected in series between said first power supply and said second power supply to form n vertical stages, each vertical stage formed by a transistor and four diode-connected transistors connected in parallel with each other, said transistor of said first vertical stage connected in series with said transistors of the 2-n vertical stages, said four diode-connected transistors of said first stage connected in series with said diode-connected transistors of the 2-n vertical stages, an emitter electrode of said transistor in the nth vertical stage and each of said emitter electrodes of the four diode-connected transistors in the nth vertical stage connected to said second power supply by a second current source,

a first connection node connecting base electrodes and collector electrodes of said four diode-connected transistors of each vertical stage in said first differential circuit to said base electrodes and said collector electrodes of said second transistors of each vertical stage in said second differential circuit, the first connection node connected to said first circuit output

terminal and to said first power supply by a third current source, and

a second circuit having an identical configuration as said first circuit including a second circuit output terminal, and a second circuit input terminal, said second circuit, said second circuit connected to a second terminal of said capacitor,

wherein said filter circuit serves as a first-order low-pass filter.

12. (New) A filter circuit comprising:

a first circuit connected to a first terminal of a capacitor comprising:

a first differential circuit comprising a plurality of fundamental circuits connected in series between a first circuit input terminal and a first circuit output terminal, each fundamental circuit formed by a first transistor and four diode-connected transistors connected in parallel with each other, and

a second differential circuit comprising a plurality of fundamental circuits connected in parallel with said plurality of fundamental circuits of said first differential circuit and between said first circuit input terminal, said first circuit output terminal, and said first terminal of said capacitor, each fundamental circuit formed by a second transistor and four diode-connected transistors connected in parallel with each other; and

a second circuit having an identical configuration as said first circuit including a second circuit output terminal, and a second circuit input terminal, said second circuit connected to the second terminal of said capacitor,

wherein said filter circuit serves as a first-order low-

pass filter.

(FIGURE 8)

13. (New) A filter circuit comprising:

a first circuit connected to a first terminal of a capacitor comprising:

a first differential circuit comprising a plurality of fundamental circuits connected in parallel between a first circuit input terminal and a first circuit output terminal, each fundamental circuit formed by a first transistor and four diode-connected transistors connected in parallel with each other, and

a second differential circuit comprising a plurality of fundamental circuits connected in parallel with said plurality of fundamental circuits of said first differential circuit and between said first circuit input terminal, said first circuit output terminal, and said first terminal of said capacitor, each fundamental circuit formed by a second transistor and four diode-connected transistors connected in parallel with each other; and

a second circuit having an identical configuration as said first circuit including a second circuit output terminal, and a second circuit input terminal, said second circuit connected to a second terminal of said capacitor,

wherein said filter circuit serves as a first-order low-pass filter.

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14. (New) A filter circuit comprising:

a first circuit comprising:

a first differential circuit formed by a first transistor having a collector electrode connected to a first power supply, and four diode-connected transistors connected in parallel with each other and each having an emitter electrode connected to an emitter electrode of said first transistor, an emitter electrode of said first transistor and each of said emitter electrodes of the four diode-connected transistors connected to a second power supply by a first current source, and

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a second differential circuit formed by a second transistor having a collector electrode connected to said first power supply, and four diode-connected transistors connected in parallel with each other and each having an emitter electrode connected to an emitter electrode of said second transistor, an emitter electrode of said second transistor and each of said emitter electrodes of the four diode-connected transistors connected to said second power supply by a second current source,

a base electrode of said first transistor in said first differential circuit and base electrodes of said four diode-connected transistors in said second differential circuit connected to a direct-current power supply, and

a first connection node connecting base electrodes and collector electrodes of said four diode-connected transistors of said first differential circuit to said base electrode and said collector electrode of said second transistor in said second differential circuit, the first connection node connected to a first circuit output terminal and to a first terminal of a first capacitor, a

second terminal of said first capacitor connected to a first circuit input terminal; and

a second circuit having an identical configuration as said first circuit including a second connection node connected to a second circuit output terminal and to a first terminal of a second capacitor, a second terminal of said second capacitor connected to a second circuit input terminal, said second circuit connected to said direct-current power supply,

wherein said filter circuit serves as a first-order high-pass filter.

(FIGURE 11)

15. (New) A filter circuit comprising:

a first circuit comprising:

a first differential circuit formed by a first transistor having a collector electrode connected to a first power supply, and four diode-connected transistors connected in parallel with each other and each having an emitter electrode connected to an emitter electrode of said first transistor, an emitter electrode of said first transistor and each of said emitter electrodes of the four diode-connected transistors connected to a second power supply by a first current source, and

a second differential circuit comprising a second transistor having a collector electrode connected to said first power supply, and four diode-connected transistors connected in parallel with each other and each having an emitter electrode connected to an emitter electrode of said second transistor, an emitter electrode of said second transistor and each of said emitter electrodes of the four diode-connected transistors connected to said second power

supply by a second current source, a base electrode of said first transistor in said first differential circuit and base electrodes of said four diode-connected transistors in said second differential circuit connected to a direct-current power supply, and

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a first connection node connecting base electrodes and collector electrodes of said four diode-connected transistors of said first differential circuit to said base electrode and said collector electrode of said second transistor in said second differential circuit, the first connection node connected to a second circuit output terminal and to a first terminal of a first capacitor, a second terminal of said first capacitor connected to a second circuit input terminal; and

a second circuit having an identical configuration as said first circuit including a second connection node connected to a first circuit output terminal and to a first terminal of a second capacitor, a second terminal of said second capacitor connected to a first circuit input terminal,

wherein said filter circuit serves as a first-order all-pass filter.
